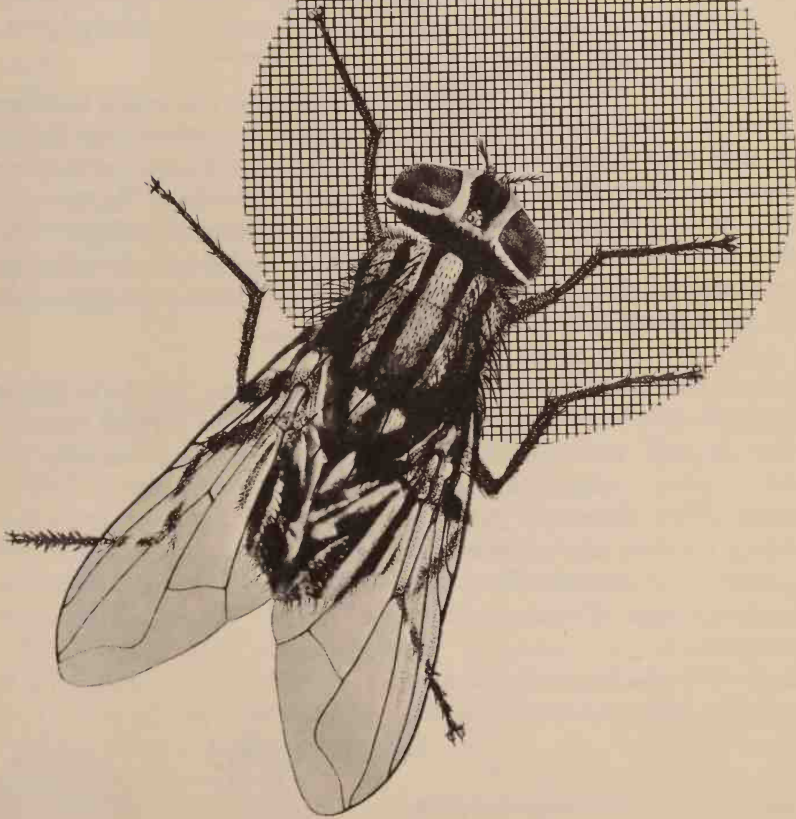


the HOUSE FLY

how
to control
it



Leaflet No. 390

U.S. DEPARTMENT OF AGRICULTURE

THE HOUSE FLY

how to control it

The house fly¹ is a danger to the health of man and animals principally because it carries and spreads disease germs that may be in the materials it breeds in, feeds on, or walks on.

This fly feeds and breeds most extensively in manure, garbage, and fermenting crop wastes. If disease germs are in these materials, or in others that they frequent, the flies get them on their hairy legs and feet and in their digestive tracts. If the flies have access to man's food, they contaminate it by walking over it and by leaving their excreta on it.

By contaminating food and water and by coming in direct contact with the hands and mouth, the flies spread typhoid, dysentery, and diarrhea. They have a part in spreading cholera, yaws, trachoma, and many other diseases. They can transmit the eggs of various parasitic worms.

To control the house fly in and around the home and on the farm, do these things:

Eliminate breeding places of flies.

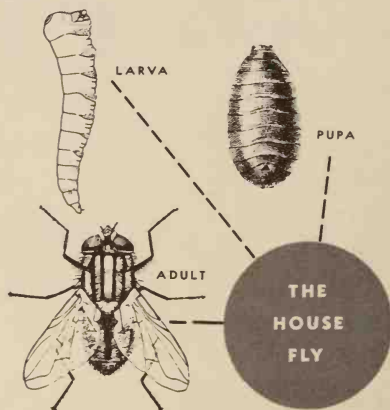
Follow sanitary practices con-

stantly. Keep garbage and other refuse under cover; dispose of garbage frequently. On the farm, dispose of manure properly.

Screen windows and doors of the home and of dairy barns and milk rooms.

Kill flies. Use space and surface sprays in and around the home. Use space sprays, surface sprays, and insecticide baits in and around farm buildings. (Electric grids and traps are effective fly-killing devices in some circumstances.)

Some house flies have developed a resistance to certain insecticides. Although flies can usually be con-



¹ *Musca domestica*.

trolled with Ciodrin, or ronnel, as recommended, resistance to these insecticides may occur in some localized areas.

SANITATION

Despite advances in the development of insecticides, sanitation continues to be the mainstay of house fly control in and around the home and on the farm.

Flies breed in places where garbage or filth accumulates. Find and eliminate such places. Clean up. Bury or otherwise dispose of dog, cat, and chicken excreta around the yard.

Make sure you have tight-fitting lids on garbage cans.

Do not let garbage accumulate in the open. Do not let it stand until it ferments; insist on frequent pickups. Burn it if it cannot be disposed of in any other way.



SCREENS

Well-fitting screens on windows and doors are essential for keeping flies out of homes, dairy barns, and milk rooms. See that screened doors swing outward.

In a humid climate, use screens of copper, aluminum, bronze, plastic, or one of the rust-resisting alloys. In a dry climate, you can use galvanized screens.

Screens with 14 meshes to the inch will keep out house flies, but 16-mesh screens will keep out some other insects also.

INSECTICIDES

To kill flies quickly inside the home, use an insecticide in a space spray (or in an aerosol). *Outside the house*, apply a surface, or residual, spray to garbage cans, screens, porches, door and window frames, edges of arches, and other places where flies gather, or use an insecticide bait. Do not contaminate food, water, or utensils.

To kill flies in and around farm buildings, apply a surface spray to the inside and outside of stables, dairy barns, hog houses, poultry houses, and other buildings in which livestock are kept. A space spray may also be used. (See precautions on page 8.) Do not contaminate feed, water, milk, or milking utensils.

Space Sprays

Several kinds of ready-to-use space sprays for killing flies inside the home and barn may be purchased. Buy the best-grade sprays from a reputable dealer.

Look for space sprays of the following types:

- Those that contain 0.1- to 0.25-percent pyrethrins plus 1 to 2 percent of a synergist. (The synergist increases the effectiveness of the pyrethrins.) Do not use pyrethrins in dairy barns or poultry houses. (See precautions for barn use on page 8.)
- Aerosol bombs provided the labels say that the contents are for use against flying insects.
- Space sprays and aerosols that contain 2-percent malathion or 0.5-

percent ronnel. Do not use the sprays in barns.

To kill flies in a room, release a mist from a hand or power sprayer or from an aerosol bomb for a few seconds, and keep the room closed for an hour.

Surface Sprays

Surface sprays leave a residue that may be effective for several weeks. Flies are killed when they come in contact with the residue.

Malathion, Ciodrin, dimethoate, and ronnel are recommended for use as surface sprays in barns, but be sure to observe the precautions for barn sprays on page 8. Malathion and ronnel may be used as surface sprays in homes. Apply them around windows and to other areas frequented by flies. Apply insecticides at the rate of 1 or 2 gallons per 1,000 square feet. Moisten the surface without causing runoff.

In treating farm buildings, use a power, compressed-air, or knapsack sprayer. The choice depends on the size of the area to be treated.

Ciodrin

Apply as a 1-percent emulsion spray. Mix 5 tablespoons of 38-percent emulsifiable concentrate in 1 gallon of water to make the proper concentration of insecticide.² Do not use Ciodrin in poultry houses.

Dimethoate

Apply as a 1-percent emulsion spray. Mix 5 tablespoons of 4-

pounds-per-gallon concentrate in 1 gallon of water to make the proper concentration of insecticide. Remove animals from buildings before using dimethoate. Do not treat milk processing rooms.

Malathion and Ronnel

Apply as a 2½-percent malathion or a 1-percent ronnel spray. Mix 10 tablespoons of 57-percent malathion or 25-percent ronnel emulsifiable concentrate in 1 gallon water. Do not use ronnel in dairy barns or poultry houses.

INSECTICIDE BAITS

Insecticide baits control house flies in some places where sprays fail, particularly in unscreened dairy barns and in poultry houses. If properly applied, they can be used in most farm buildings without harming domestic animals. The baits described here are not approved for use in the home, milk rooms, and restaurants.

The effective insecticides are malathion, ronnel, and trichlorfon. Ready-to-use dry baits containing most of these insecticides are on the market.

Making a Bait

Try to buy a ready-to-use bait. If it is not available, buy an emulsifiable concentrate or wettable powder of one of the approved insecticides and make a bait.

Liquid Bait

Make a liquid bait by mixing an arrestant—molasses, sirup, or

² If the product you buy contains a lower or higher percentage of the insecticide, use proportionately more or less of it.

sugar—and one of the insecticides with water. Mix 12 ounces of an arrestant in 1 gallon of water. The amounts of insecticide to add to the water-arrestant solution are given in the tabulation that follows.

Insecticide	Emulsifiable concentrate	Wettable powder
	Tablespoons	Level tablespoons
Trichlorfon-----	-----	1
Malathion-----	6	24
Ronnel-----	20	20

Dry Bait

A dry bait can be made by mixing a wettable powder of an insecticide in granulated sugar. Add about ¼ teaspoon of lampblack per pound of sugar. Stir with a paddle until all the grains of sugar are coated with powder and colored a dirty gray. This prevents mistaking the bait for ordinary sugar. The amounts of wettable powder to mix with 1 pound of sugar are given in the following guide.

GUIDE FOR MIXING A DRY BAIT

Insecticide	Level tablespoons
Trichlorfon-----	2
Malathion-----	5
Ronnel-----	2½

Cornmeal Bait

A cornmeal bait is recommended for use on moist surfaces, where a dry sugar bait would dissolve.

While stirring 1 pound of coarsely ground cornmeal, slowly add the following:

- 1 tablespoon of peanut oil.
- Wettable powder of trichlorfon, malathion, or ronnel. (For proper amount, see "Guide for Mixing a Dry Bait.")
- 2 ounces of powdered sugar.
- ¼ teaspoon of lampblack.

Stir with a paddle until all the meal particles are coated with the sugar and the wettable powder. Stirring for 5 minutes insures proper mixing of quantities of 1 to 5 pounds. Mixing of larger quantities by hand is not recommended.

Applying the Bait Frequency

When flies are numerous, spread bait daily. When fewer flies are seen, spread bait once every 3 or 4 days. If flies again become numerous, apply more frequently.

How and Where

Place baits where you find flies gathering. The arrestant will make the flies stop and feed; it is not a true chemical attractant. Once a few flies gather, other flies see them and join them.

If you buy a *ready-to-use dry bait*, apply it according to the directions on the container.

Apply *homemade liquid bait* with an ordinary sprinkling can. Plug about half the holes so that the bait will spread thinly in strips 4 to 6 inches wide on floors. If the floors are covered with dirt or litter, sprinkle the bait on sheets of tin, wood, paper, or other material.

Keep trichlorfon bait away from poultry. Do not use in parts of build-

ing where poultry feed. Be careful not to contaminate feed, water, or utensils.

Apply at the rate of 1 gallon to 1,000 square feet.

Apply *homemade, dry sugar bait* with a shaker-top can. Sprinkle thinly in narrow strips on floors, walkways, window sills, and other places where flies gather, but not where it will contaminate animal feed, water, human food, or utensils. Use it only on dry, firm surfaces. On loose material, such as straw, the bait may fall where flies cannot get to it.

Apply at the rate of 3 tablespoons per 1,000 square feet—or about $\frac{1}{4}$ pound for an average-size barn (one with 2,000 to 4,000 square feet of floor). Use larger quantities if flies are numerous.

Apply *cornmeal bait* at the rate of 2 to 4 ounces per 1,000 square feet in barns or sheds. A higher rate—4 to 8 ounces per 1,000 square feet—may be necessary in open places; the rate depends on the condition of the surface and on the abundance of flies.

PAINT-ON BAIT

Neither a dry bait nor a liquid bait gives good control of flies in

animal pens in which the ground is trampled, littered, or muddy.

A paint-on bait usually gives good control in these places. It is applied with a paintbrush to suitable surfaces nearby, such as posts, railings, or board fences. Corn sirup, blackstrap molasses, or a thick water-and-sugar slurry containing 1 percent of malathion, trichlorfon, or ronnel makes a satisfactory paint-on bait. The amounts of insecticide to mix in 1 gallon of arrestant are listed below.

Insecticide	Emulsi- fiable concentrate	Wettable powder
	Tablespoons	Level tablespoon
Trichlorfon.....	-----	10
Malathion.....	4	20
Ronnel.....	10	20

Apply the bait whenever flies become numerous. Paint or daub it on. If it is not destroyed by rain, one application is effective about a week.

If you apply bait to a fence around a pen, apply it only to the outside.

A fence around an average-size calf pen or pigpen can be adequately treated with 2 quarts of bait.

MANURE DISPOSAL

House fly control on the farm requires proper management of livestock, and poultry wastes.

To discourage fly reproduction, manure should be removed daily from stables, dairy barns, pig-feeding lots, and poultry houses, and spread thinly on fields. This spread-

ing prevents the development of fly maggots.

If it is necessary to store the manure for short periods, screened storage pits or bins should be used. Composting is an alternative holding technique. However, if the manure is composted, it must be turned periodically to discourage maggot growth.

Slatted floors are placed over collection pits in animal shelters to reduce fly reproduction. Some large livestock operations flush animal wastes from buildings with water and spread the slurry on fields with a tank-type spreader or an irrigation system. If tanks are used they should be screened.

If a waste disposal lagoon is used, its banks should be sloped to prevent propagation of flies and accumulation of wastes.

GRIDS AND TRAPS

Electric grids mounted in the open, or attached to window and door screens, kill many flies, but often do not produce satisfactory control.

An electric grid consists of parallel wires, about one-quarter inch apart, connected to a high-voltage, low-amperage circuit. Insects that try to pass between any two wires are electrocuted.

Flies can be attracted to the grid with ultraviolet fluorescent lamps (type BL or BLB) or with bait. A good bait consists of the following: 8 ounces of cornmeal, 5 ounces of molasses, 1 cup of water, and a ½ cake of yeast.

Several kinds of electric grid traps are used in places where flies gather. Among them are traps equipped with ultraviolet lamps, homemade or commercial screen traps, and jar traps.

GARBAGE DUMPS AND PACKING PLANTS

House flies that breed in municipal garbage dumps can be controlled by applying one of the insecticide baits discussed in this leaflet. Apply either a liquid or a dry bait. Apply liquid bait at the rate of 5 to 10 gallons per acre. Apply dry bait at the rate of 5 to 10 pounds per acre.

Flies that breed in wastes around vegetable- and fruit-packing plants can be controlled by spreading baits, spraying waste material with insecticide, applying surface sprays outside the plant where flies gather, and applying surface sprays and space sprays inside the plant before the packing season begins. Space sprays may be used during the packing season, but only during hours when the plant is not in operation. Spraying waste material with insecticide may be hazardous to birds and other wildlife.

PRECAUTIONS

Pesticides used improperly can be injurious to man, animals, and plants. Follow the directions and heed all precautions on the labels.

Store pesticides in original containers—out of the reach of children and pets—and away from foodstuff.

Apply pesticides selectively and carefully. Do not apply a pesticide

when there is danger of drift to other areas. Avoid prolonged inhalation of a pesticide spray or dust.

After handling a pesticide, do not eat, drink, or smoke until you have washed. In case a pesticide is swallowed or gets in the eyes, follow the first aid treatment given on the label, and get prompt medical attention. If a pesticide is spilled on your skin or clothing, remove clothing immediately and wash skin thoroughly.

Dispose of empty pesticide containers by wrapping them in several

layers of newspaper and placing them in your trash can.

Barn sprays.—Do not use pyrethrins or ronnel in poultry houses or dairy barns. Do not use trichlorfon in poultry houses. Remove animals from dairy barns before using sprays other than Ciodrin. Remove poultry from houses before spraying with dimethoate.

Home sprays.—Use only products specifically labeled for use in homes.

NOTE: Some States have restrictions on the use of certain pesticides. Check your State and local regulations.



Prepared by
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Agricultural Research Service

This edition replaces all previous editions of this publication. Because of changed insecticide recommendations, earlier copies should be destroyed.

Washington, D.C.

Revised February 1972

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C., 20402 - Price 10 cents

Stock Number 0100-1508

U.S. GOVERNMENT PRINTING OFFICE: 1972 O-443-643